PATENT ABSTRACTS OF JAPAN

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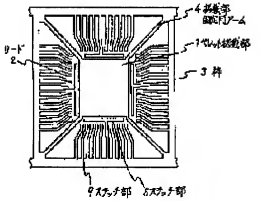
(71)Applicant : NEC IC MICROCOMPUT SYST LTD
(72)Inventor : KAWAKAMI KENICHI

(54) LEAD FRAME

(57)Abstract:
PURPOSE: To reduce a wiring region on a pellet and to make small the area of the chip in the case where a wiring having many wiring distributions is outputted to pins on the pellet in the lead frame of an IC and moreover, to realize the lead frame, on which a low-impedance wiring can be provided.
CONSTITUTION: A lead frame is formed into a constitution, wherein leads 2 of the lead frame are deformed to change their forms like stitch parts 5 and can be bonded to leads 2 of the same lead frame from pads on a pellet located in a position apart from the leads 2.



TECHNICAL FIELD

[Industrial Application]This invention relates to the leadframe for pellet loading especially about a leadframe.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application]This invention relates to the leadframe for pellet loading especially about a leadframe.
[0002]
[Description of the Prior Art]Generally, the leadframe for pellet loading puts a pellet on a pellet mount part, and enables connection between a pellet and IC exterior by connecting with the stitch part of a lead of a leadframe with wire rods, such as a gold streak, from the pad for bonding on a pellet.
[0003]Drawing 6 is a top view of an example of the conventional leadframe, and a partial expansion perspective view of an example to which drawing 7 carried and carried out bonding of the pellet to the leadframe of drawing 6.
[0004]As shown in drawing 6 and drawing 7, in carrying the pellet 6 in a leadframe and usually carrying out bonding to the stitch part 9 of the lead 2 of a leadframe from the pad 7 on the pellet 6, It is connected to the stitch part 9 of the lead 2 of one leadframe by the bonding wire 8 from one or two or more adjoining pads 7.
[0005]Drawing 8 is a top view of an example of the wiring on the pellet at the time of using the leadframe of drawing 6.
[0006]As shown in drawing 8, aluminum wiring C-H is connected to the pad 7b, and aluminum wiring E-H other than aluminum wiring C and D is designed not have common impedance before the pad 7b.
[0007]Drawing 9 is a partial expansion perspective view of other examples which carried and carried out bonding of the pellet to the leadframe of drawing 5.
[0008]As shown in drawing 9, it is the example which carried out bonding to the one stitch part 10 in this case from the two adjoining pads 7, but only the case where the pad 7 adjoins can carry out bonding from two or more pads 7 to the stitch part 10 of one lead.
[0009]
[Problem(s) to be Solved by the Invention]In the conventional leadframe, since bonding was carried out to the stitch part of one lead of a leadframe by the bonding wire from one or two or more adjoining bonding pads of the pellet carried on the leadframe, there was the following fault.
[0010](1) On the pellet, when the wiring connected to one pad was required for many wiring division like GND or V_{cc}, many wiring areas on a pellet had to be

taken, and ****** of the pellet was made large.
[0011](2) The aluminum wiring on a pellet might have several ohms - a number + ohm, and high impedance, and the fault on circuit operation might be produced.
[0012](3) Since the pad which wires in order to solve the above-mentioned fault was divided and it had connected in IC exterior as a pin of IC conventionally, the pin count of IC was increased.
[0013]Then, the purpose of this invention is in the place which cancels the above fault and provides the following leadframe.
[0014](1) Leadframe which can realize wiring without taking many wiring areas, even when the wiring connected to one pad is required for many wiring division.
[0015](2) The leadframe which can realize wiring of very small impedance.
[0016](3) The leadframe which does not need the pin of IC for realizing wiring of a wiring division or low impedance.
[0017]
[Means for Solving the Problem]In a leadframe which has two or more leads with which this invention has been arranged around a pellet mount part which carries an IC pellet, and this pellet mount part, and a stitch part was formed at a tip, It connects with a lead of at least one of the leads of said plurality, and a stitch part over plurality of this stitch part is provided between said pellet mount part and said stitch part.
[0018]
[Example]Hereafter, the example of this invention is described with reference to drawings.
[0019]It is the partial expansion perspective view to which drawing 1 carried the top view of the 1st example of this invention, and drawing 2 carried the pellet in the leadframe of drawing 1.
[0020]As the 1st example is shown in drawing 1, it connects with the lead 2 of one of two or more leads, and the stitch part 5 over the plurality of the stitch part 9 is formed between the pellet mount part 1 and the stitch part 9 at lead 2 tip.
[0021]As shown in drawing 2, it is connected to the stitch part 5, and further, it is connected to a pin and the pad A7a of the pads 7 of the pellet 6 and the pad B7b are outputted to IC exterior.
[0022]Drawing 5 is a top view of the wiring on the pellet at the time of using the leadframe of the 1st example of this invention.
[0023]The effect of the 1st example is explained concretely.
[0024]As the aluminum wiring on the pellet at the time of using the conventional leadframe is shown in drawing 8, aluminum wiring E-H other than aluminum wiring C and D is designed not have common impedance before the pad B7b.
[0025]On the other hand, as shown in drawing 5, the aluminum wiring on the pellet at the time of using the leadframe of the 1st example connects the aluminum wiring C and D to PADO A7a, and connects E-H to the pad B7b.
[0026]Following effect can be achieved by carrying to the leadframe of the 1st example, as the pellet 6 of this drawing 5 is shown in drawing 2.
[0027](1) For example, to the impedance at the time of performing 3-mm aluminum wiring on a pellet being 1ohm - about 2ohms, if same wiring is performed on a leadframe, impedance will be set to 0.1ohm or less.
[0028](2) Usually, although the wiring area on a pellet occupies 20% - 30% of a total pellet area, By utilizing a leadframe as wiring using the leadframe of this

example, the wiring area on a pellet is reduced, and if it is about 3000 ICs, pellet area is reducible 5% - about 10%.

[0029](3) About IC which divides wiring with many wiring divisions into some pins, and is outputting it on a pellet like GND or V_{cc}, a pin count can be reduced by using the leadframe of this example.

[0030]Drawing 3 is an important section top view of the 2nd example of this invention, and drawing 4 is an important section top view of the 3rd example of this invention.

[0031]About the shape of the stitch part of a lead of the leadframe of this invention, the 2nd example of union ******** and the 3rd example are considered in the stitch part 5 and the stitch part 15 other than the 1st example of the stitch part 5 of T shape like drawing 1 like the stitch part 15 of L shape like drawing 3, and drawing 4.

[0032]

[Effect of the Invention]According to the leadframe of this invention, the following effect can be acquired like [it is ****** and] by the above explanation.

[0033](1) By utilizing the stitch part of a leadframe as wiring, the wiring area on a pellet can be reduced and the area of a pellet can be reduced 5% - about 10%.

[0034](2) By utilizing the terminal of a leadframe as wiring, wiring of low impedance is realizable.

[0035](3) A pin count can be reduced about IC which divides wiring into some pins and is outputting it for a wiring division.

[Translation done.]

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention]In the conventional leadframe, since bonding was carried out to the stitch part of one lead of a leadframe by the bonding wire from one or two or more adjoining bonding pads of the pellet carried on the leadframe, there was the following fault.
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[Translation done.]

EFFECT OF THE INVENTION

[Effect of the Invention]According to the leadframe of this invention, the following effect can be acquired like [it is ****** and] by the above explanation.

[0033](1) By utilizing the stitch part of a leadframe as wiring, the wiring area on a pellet can be reduced and the area of a pellet can be reduced 5% - about 10%.

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[Translation done.]

* NOTICES *

1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem]In a leadframe which has two or more leads with which this invention has been arranged around a pellet mount part which carries an IC pellet, and this pellet mount part, and a stitch part was formed at a tip, It connects with a lead of at least one of the leads of said plurality, and a stitch part over plurality of this stitch part is provided between said pellet mount part and said stitch part.

[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1]A pellet mount part which carries an IC pellet.
Two or more leads with which it has been arranged around this pellet mount part, and a stitch part was formed at a tip.
It is the leadframe provided with the above, and connected with a lead of at least one of the leads of said plurality, and a stitch part over plurality of this stitch part was provided between said pellet mount part and said stitch part.

[Translation done.]

EXAMPLE

[Example]Hereafter, the example of this invention is described with reference to drawings.
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[Translation done.]

PRIOR ART

[Description of the Prior Art]Generally, the leadframe for pellet loading puts a pellet on a pellet mount part, and enables connection between a pellet and IC exterior by connecting with the stitch part of a lead of a leadframe with wire rods, such as a gold streak, from the pad for bonding on a pellet.
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[0005]Drawing 8 is a top view of an example of the wiring on the pellet at the time of using the leadframe of drawing 6.
[0006]As shown in drawing 8, aluminum wiring C-H is connected to the pad 7b, and aluminum wiring E-H other than aluminum wiring C and D is designed not have common impedance before the pad 7b.
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[Translation done.]

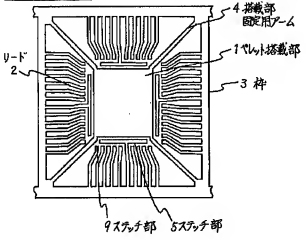
DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1]It is a top view of the 1st example of this invention.
[Drawing 2]It is a partial expansion perspective view which carries a pellet in the leadframe of drawing 1.
[Drawing 3]It is an important section top view of the 2nd example of this invention.
[Drawing 4]It is an important section top view of the 3rd example of this invention.
[Drawing 5]It is a top view of the wiring on the pellet at the time of using the leadframe of the 1st example of this invention.
[Drawing 6]It is a top view of an example of the conventional leadframe.
[Drawing 7]It is a partial expansion perspective view of an example which carried and carried out bonding of the pellet to the leadframe of drawing 6.
[Drawing 8]It is a top view of an example of the wiring on the pellet at the time of using the leadframe of drawing 6.
[Drawing 9]It is a partial expansion perspective view of other examples which carried and carried out bonding of the pellet to the leadframe of drawing 6.
[Description of Notations]
1 Pellet mount part
2 Lead
3 Frame
4 The arm for mount part immobilization
5, 9, 10, and 15 Stitch part
6 Pellet
7, 7a, and 7b Pad
8 Bonding wire

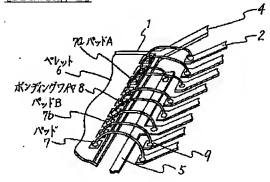
[Translation done.]

DRAWINGS

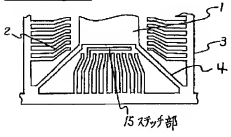
[Drawing 1]



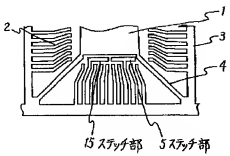
[Drawing 2]



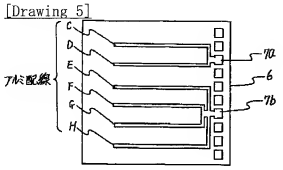
[Drawing 3]



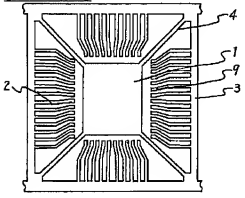
[Drawing 4]



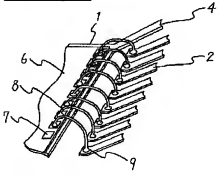
[Drawing 5]



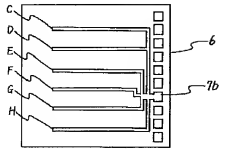
[Drawing 6]



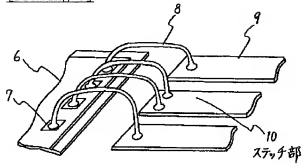
[Drawing 7]



[Drawing 8]



[Drawing 9]

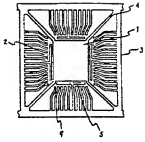


[Translation done.]

(54) LEAD FRAME
(11) 5-121631 (A) (43) 18.5.1993 (19) JP
(21) Appl. No. 3-279439 (22) 25.10.1991
(71) NEC IC MICROCOMPUT SYST LTD (72) KENICHI KAWAKAMI
(51) Int. Cl⁵. H01L23/50

PURPOSE: To reduce a wiring region on a pellet and to make small the area of the chip in the case where a wiring having many wiring distributions is outputted to pins on the pellet in the lead frame of an IC and moreover, to realize the lead frame, on which a low-impedance wiring can be provided.

CONSTITUTION: A lead frame is formed into a constitution, wherein leads 2 of the lead frame are deformed to change their forms like stitch parts 5 and can be bonded to leads 2 of the same lead frame from pads on a pellet located in a position apart from the leads 2.



1: pellet mounting part, 3: frame, 4: arm for mounting part fixing use, 5: stitch part

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(51)Int.Cl.[5]	識別記号	庁内整理番号	ＦＩ	技術表示箇所
Ｈ０１Ｌ　23/50		Ｓ　9272－4Ｍ		

審査請求　未請求　請求項の数１(全　4　頁)

(21)出願番号　特願平3－279139

(22)出願日　平成3年(1991)10月25日

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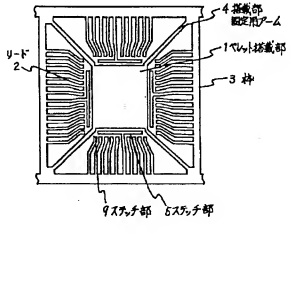
(74)代理人　弁理士　内原　晋

(54)【発明の名称】　リードフレーム

(57)【要約】
【目的】ＩＣのリードフレームにおいて、ペレット上で布線分けの多い配線がピンへ出力されている場合に、ペレット上の配線領域を減らしチップ面積を小さくする。更に、低インピーダンスの配線が可能なリードフレームを実現する。
【構成】リードフレームのリード２を変形してステッチ部５の様に形状を変え、離れた位置にあるペレット上のパッドから同一のリードフレームのリード２へのボンディングを可能にしている。



す様に、アルミ配線CとDをパドルA7aへ接続し、E～Hをパッド7bへ接続する。

【0026】この図5のペレット6を図2に示す様に第1の実施例のリードフレームへ搭載することにより、下記の様な効果をあげることができる。

【0027】（1）例えば、ペレット上で3mmのアルミ配線を行った場合のインピーダンスは、1Ω～2Ω程度であるのに対し、リードフレーム上で同様の配線を行えばインピーダンスは0．1Ω以下となる。

【0028】（2）通常、ペレット上の配線領域は全ペレット面積の20%～30%を占めるが、本実施例のリードフレームを使用しリードフレームを配線として活用することで、ペレット上の配線領域を減らし、3000素子程度のICであれば5%～10%程度ペレット面積を縮小することができる。

【0029】（3）GNDやV_{cc}の様にペレット上で布線分けの多い配線を幾つかのピンに分けて出力しているICについては、本実施例のリードフレームを使用することにより、ピン数を減らすことができる。

【0030】図3は本発明の第2の実施例の要部平面図、図4は本発明の第3の実施例の要部平面図である。

【0031】また、本発明のリードフレームのリードのステッチ部の形状については、図1の様なT字型のステッチ部5の第1の実施例の他に、図3の様なL字型のステッチ部15，図4の様にステッチ部5とステッチ部15を組合わせた第2の実施例および第3の実施例が考えられる。

【0032】

【発明の効果】以上の説明により明かな様に、本発明のリードフレームによれば、下記の効果を得ることができる。

【0033】（1）リードフレームのステッチ部を配線として活用することで、ペレット上の配線領域を減らし

ペレットの面積を5%～10%程度縮小することができる。

【0034】（2）リードフレームの端子を配線として活用することで、低インピーダンスの配線を実現できる。

【0035】（3）布線分けのために配線を幾つかのピンに分けて出力しているICについては、ピン数を減らすことができる。

【図面の簡単な説明】

【図1】本発明の第1の実施例の平面図である。

【図2】図1のリードフレームにペレットを搭載した部分拡大斜視図である。

【図3】本発明の第2の実施例の要部平面図である。

【図4】本発明の第3の実施例の要部平面図である。

【図5】本発明の第1の実施例のリードフレームを用いた場合のペレット上の配線の平面図である。

【図6】従来のリードフレームの一例の平面図である。

【図7】図6のリードフレームにペレットを搭載しボンディングした一例の部分拡大斜視図である。

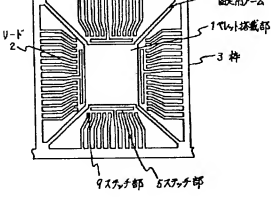
【図8】図6のリードフレームを用いた場合のペレット上の配線の一例の平面図である。

【図9】図6のリードフレームにペレットを搭載しボンディングした他の例の部分拡大斜視図である。

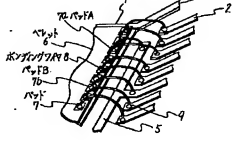
【符号の説明】

1　ペレット搭載部
2　リード
3　枠
4　搭載部固定用アーム
5，9，10，15　ステッチ部
6　ペレット
7，7a，7b　パッド
8　ボンディングワイヤ

【図1】



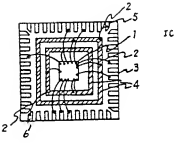
【図2】



(54) THIN TYPE HYBRID INTEGRATED CIRCUIT SUBSTRATE
(11) 4-129250 (A) (43) 30.4.1992 (19) JP
(21) Appl. No. 2-250588 (22) 20.9.1990
(71) NEC CORP (72) SHIGEMI NAKAMURA(1)
(51) Int. Cl⁵. H01L23/12

PURPOSE: To obtain a substrate, in which conductor patterns are arranged easily and which has general-purpose properties, by forming electrically insulated double loop-shaped conductor patterns surrounding a semiconductor IC chip mounting section and connecting a power terminal to one of the double loop-shaped conductor patterns and a ground terminal to the other.

CONSTITUTION: When a power terminal 5 is used as a power supply and a ground terminal 6 as a ground in common and semiconductor IC chips 1 are designed as a leadless type thin-type hybrid integrated circuit device, all gold wires 2 are connected to either one of loop-shaped conductor patterns 4 formed around the semiconductor IC chips 1 respectively, and connected to the power terminal 5 and the ground terminal 6 by the bonding of the gold wires 2 in the vicinity of the power terminal 5 or the ground terminal 6 on the conductor patterns 4. Accordingly, even when the pads for the power supply or pads for the ground of the mounted semiconductor IC chips 1 are dispersed into approximately two or four respectively, the power supply and ground of the hybrid integrated circuit device can be set at the positions of specified power terminal 5 and ground terminal 6.



3: substrate

⑲日本国特許庁(JP)　⑪特許出願公開

⑫公開特許公報(A)　平4−129250

⑤Int.Cl.[5]　識別記号　庁内整理番号　⑬公開　平成4年(1992)4月30日

H 01 L 23/12　7352−4M　H 01 L 23/12　E
7352−4M　Q

審査請求　未請求　請求項の数 1　(全3頁)

⑭発明の名称　薄型混成集積回路基板

⑳特　願　平2−250588
㉒出　願　平2(1990)9月20日

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㉔代理人　弁理士 内原　晋

明細書

発明の名称

薄型混成集積回路基板

特許請求の範囲

少くとも1個の半導体ICチップを搭載するリードレスタイプの薄型混成集積回路基板において、前記半導体ICチップ搭載部を取囲む電気的に絶縁された二重のループ状の導体パターンを設け、該二重のループ状の導体パターンのうちの一方には電源端子を、他方にはグランド端子を接続したことを特徴とする薄型混成集積回路基板。

発明の詳細な説明

〔産業上の利用分野〕

本発明は薄型混成集積回路基板に関し、特にゲートアレー等のパッド配置が可変である半導体ICチップを搭載するリードレスタイプの薄型混成集積回路基板に関する。

〔従来の技術〕

従来、この種の薄型混成集積回路装置は、表面に搭載した少くとも1個の半導体ICチップのパッドと薄型混成集積回路基板(以下基板と記す)上の導体パターンとを金線でボンディングする事により接続し、そこから基板上の外部接続用パッドに引き出され、最後に、樹脂封止されるという構造になっている。

この薄型混成集積回路装置を赤外線等のリフロー方式かレーザー方式、あるいは、こて付け等によりセットのマーザーボート上に半田付けにより接続して搭載している。

この方法を用いると、従来の超小型モールドタイプのICパッケージを用いるより30〜50%実装体積が低減され、開発費及び製品単価も1／2以下で済む利点もある。

〔発明が解決しようとする課題〕

この従来の基板を用いた混成集積回路装置では、基板上の配線パターンが単純な形状に形成されているため、搭載する半導体ICチップのパッ

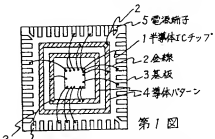
グ治具や検査治具に汎用性を持たせて、それぞれの薄型混成集積回路装置の開発時の費用を大幅に削除する効果を有するものである。

図面の簡単な説明

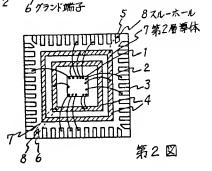
第１図は本発明の第１の実施例の基板に半導体ＩＣチップを搭載した平面図、第２図は本発明の第２の実施例の基板に半導体ＩＣチップを搭載した平面図である。

１…半導体ＩＣチップ、２…金線、３…基板、４…導体パターン、５…電源端子、６…グランド端子、７…第２層導体、８…スルーホール。

代理人　弁理士　内　原　晋



第１図



第２図